

WHAT IS CLAIMED is:

1. An adenovirus vector comprising an adenovirus gene under transcriptional control of a cell type-specific transcriptional response element (TRE).

2. An adenovirus vector according to claim 1, wherein the adenovirus gene is a gene essential for adenoviral replication.

3. An adenovirus vector according to claim 2, wherein the gene essential for replication is an adenoviral early gene.

4. An adenovirus vector according to claim 3, wherein the adenovirus early gene is E1A.

5. An adenovirus vector according to claim 3, wherein the adenovirus early gene is E1B.

6. The adenovirus vector of claim 2, wherein the gene essential for adenoviral replication is the adenovirus E4 gene.

7. The adenovirus vector of claim 2, wherein the gene essential for adenoviral replication is an adenovirus late gene.

8. An adenovirus vector of claim 1, wherein the cell type-specific TRE is prostate cell specific.

5 9. An adenovirus vector comprising a first adenovirus gene under transcriptional control of a first cell type-specific transcriptional response element (TRE) and a second gene under transcriptional control of a second cell type-specific TRE, wherein the first cell type-specific TRE and the second cell type-specific TRE are substantially identical.

10. An adenovirus vector according to claim 9, wherein the second gene is an adenoviral gene.

10 11. An adenovirus vector according to claim 10, wherein the adenoviral gene is a gene essential for adenoviral replication.

15 12. An adenovirus vector according to claim 11, wherein the gene essential for adenoviral replication is an adenovirus early gene.

13. An adenovirus vector according to claim 12, wherein the adenovirus early gene is E1A.

20 14. An adenovirus vector according to claim 12, wherein the adenovirus early gene is E1B.

25 15. The adenovirus vector of claim 8, wherein the first and second genes are essential for adenovirus replication.

16. The adenovirus vector of claim 15, wherein the first and second genes are adenovirus early genes.

17. The adenovirus vector of claim 16, wherein the first gene is E1A and the second gene E1B.

5 18. The adenovirus vector of claim 16, wherein one gene essential for replication is an adenovirus early gene and one gene essential for replication is an adenovirus late gene.

10 19. The adenovirus vector of claim 15, wherein the first cell type-specific TRE and the second cell type-specific TRE are prostate cell-specific.

20. The adenovirus vector of claim 19, wherein the first and second prostate cell-specific TREs are *PSE*-TREs.

15 21. The adenovirus vector of claim 19, wherein the first and second prostate cell-specific TREs are *PB*-TREs.

22. The adenovirus vector of claim 19, wherein the first and second prostate cell-specific TREs are *hKLK2*-TREs.

20 23. The adenovirus vector of claim 15, wherein the first cell type-specific TRE and the second cell type-specific TRE are liver cell-specific.

25 24. The adenovirus vector of claim 23, wherein the first and second liver cell-specific TREs are *AFP*-TREs.

25 25. The adenovirus vector of claim 15, wherein the first cell type-specific TRE and the second cell type-specific TRE are breast cancer cell-specific.

26. The adenovirus vector of claim 25, wherein the first and second breast cancer cell-specific TREs are *MUC1*-TREs.

5 27. The adenovirus vector of claim 25, wherein the first and second breast cancer cell-specific TREs are *CEA*-TREs.

28. The adenovirus vector of claim 8, wherein the second gene is a transgene.

10 29. The adenovirus vector of claim 28, wherein said transgene is a cytotoxic gene.

30. The adenovirus vector of claim 8, wherein the adenoviral gene is the adenovirus death protein gene.

15 31. A host cell comprising the adenovirus vector of claim 1.

32. A composition comprising the adenovirus vector of claim 1.

20 33. A method for using the adenovirus vector of claim 1 comprising introducing said vector into a cell which allows the cell type specific TRE to function, wherein introduction of the adenovirus vector results in cytotoxicity.

25 34. A method according to claim 33, wherein the cell is a mammalian cell.

35. A method according to claim 34, wherein the mammalian cell is a prostate cell.

36. A method for conferring selective cytotoxicity on a target cell which allows a cell type-specific TRE to function, comprising contacting said cell with an adenovirus vector of claim 1, wherein the adenovirus vector enters the cell.

5 37. A method according to claim 36, wherein cell is a mammalian cell.

38. A method according to claim 37, wherein the mammalian cell is a prostate cell.

10 39. A method according to claim 37, wherein the mammalian cell is a liver cell.

40. A method according to claim 37, wherein the mammalian cell is a breast cancer cell.

15 41. A method according to claim 37, wherein the mammalian cell is a colon cancer cell.

20 42. A method for propagating an adenovirus vector of claim 1, said method comprising combining an adenovirus vector of claim 1 with cells which allow function of the cell type-specific TRE, whereby said adenovirus is propagated.

43. A method according to claim 42, wherein the cells are mammalian cells.

25 44. A method for suppressing tumor growth comprising contacting a target cell with an adenovirus vector according to claim 1 such that the adenovirus vector is introduced into the target cell.

45. A method according to claim 44, wherein the target cell is a mammalian cell.

5 46. A method according to claim 45, wherein the mammalian cell is a prostate cell.

47. A method according to claim 45, wherein the mammalian cell is a liver cell.

10 48. A method according to claim 45, wherein the mammalian cell is a breast cancer cell.

15 49. A method according to claim 45, wherein the mammalian cell is a colon cancer cell.

50. A method for modifying the genotype of a target cell comprising contacting the target cell with the adenovirus vector according claim 1 such that the adenovirus vector is introduced into the target cell.

20 51. An adenovirus vector comprising at least one of (1) an adenovirus gene essential for propagation or (2) a transgene, wherein said adenovirus gene and said transgene are under the transcriptional control of a target cell specific response element for transcription of a target cell specific protein, said specific response element comprising an enhancer and promoter specific for said target cell.

25 52. An adenovirus vector according to claim 51, wherein said adenovirus gene is an early gene.

53. A method for killing target cells in a mixture of cells, said method comprising:

5 combining said mixture of cells with an adenovirus vector according to claim 52, wherein said adenovirus comprises an adenovirus gene essential for propagation under the transcriptional control of said mammalian target cell response element, wherein said adenovirus vector is competent for proliferation in said target cell.

54. An adenoviral vector comprising a unique AgeI site 5' of E1A initiation codon and a unique EagI site 5' of E1B.